

Appl. No. 10/674,0097, 2007
Amdt. Dated July 9, 2007
Reply to Office Action of March 7, 2007

Amendments to the Claims:

This listing will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

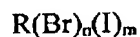
Claim 1 (Currently amended): A fluorine-containing elastomer having a copolymer composition, which comprises 50-85% by mole of (a) vinylidene fluoride, 0-25% by mole of (b) tetrafluoroethylene, 7-20% by mole of (c) perfluoro(methyl vinyl ether), 2.2-15% ~~3-15%~~ by mole of (d) $\text{CF}_2=\text{CFO}[\text{CF}_2\text{CF}(\text{CF}_3)\text{O}]_n\text{CF}_3$, where n is an integer of 4-6, ~~2-6~~, and 0.1-2% by mole of (e) RfX , where Rf is an unsaturated fluorocarbon group having 2-8 carbon atoms, which may contain at least one ether group, and X is a bromine or iodine atom.

Claim 2 (Original): A fluorine-containing elastomer according to Claim 1, wherein the elastomer has a solution viscosity η sp/c (1 wt.% methyl ethyl ketone solution at 35°C) of 0.1-2 dl/g.

Claim 3 (Original): A fluorine-containing elastomer according to Claim 1, wherein the elastomer has a solution viscosity η sp/c (1 wt.% methyl ethyl ketone solution at 35°C) of 0.1-7 dl/g.

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Claim 4 (Original): A fluorine-containing elastomer according to Claim 1, wherein the elastomer is prepared by copolymerization in the presence of a bromo and/or iodo compound represented by the following general formula:



Where R is a saturated fluorohydrocarbon group or a saturated chlorofluorohydrocarbon group, each having 2-6 carbon atoms, n and m each are 0, 1 or 2, and m+n is 2.

Claim 5 (Original): A fluorine-containing elastomer according to Claim 4, wherein the bromo and/or iodo compound is $\text{ICF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{I}$.

Claim 6 (Previously presented): A fluorine-containing elastomer according to Claim 1, wherein a sum total of the component (c) and of the component (d) is at least 10% by mole.

Claim 7 (Previously presented): A fluorine-containing elastomer according to Claim 1, wherein the component (e) is $\text{CF}_2=\text{CFOCF}_2\text{CF}_2\text{Br}$, $\text{CF}_2=\text{CFBr}$, $\text{CF}_2=\text{CHBr}$, $\text{CF}_2=\text{CFI}$ or $\text{CF}_2=\text{CHI}$.

Claim 8 (Previously presented): A fluorine-containing elastomer according to Claim 1, wherein the elastomer has a glass transition temperature T_g of -30°C to -45°C .

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Claim 9 (Previously presented): A fluorine-containing elastomer according to Claim 1, wherein the elastomer can give a curing product having low-temperature characteristics according to ASTM D1329 after organic peroxide curing:

$$-43^{\circ}\text{C} \leq \text{TR}_{10} < -30^{\circ}\text{C} < \text{TR}_{70} \leq -20^{\circ}\text{C}.$$

Claim 10 (Original): A fluorine-containing elastomer composition, which comprises 100 parts by weight of a fluorine-containing elastomer according to Claim 1, 0.1-10 parts by weight of an organic peroxide, 0.1-10 parts by weight of a polyfunctional unsaturated compound and not less than 2 parts by weight of an acid acceptor.

Claim 11 (Original): A fluorine-containing elastomer composition according to Claim 10, wherein not more than 40 parts by weight of fine bituminous powder is further contained.

Claim 12 (Original): A fluorine-containing elastomer composition according to Claim 10, wherein not more than 40 parts by weight of a flat filler is further contained.

Claim 13 (Previously presented): A fluororubber-based sealing material obtaining by curing molding of a fluorine-containing elastomer composition according to Claim 10.

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Claim 14 (Previously presented): A fluororubber-based sealing material according to Claim 13, for use as a sealing material for an automobile fuel system.

Claim 15 (Original): A fluororubber-based seal material according to Claim 13, which has a TR_{10} value of not more than -30°C according to ASTM D1329 and a methanol swelling rate of not more than +50% at 25°C for 168 hours according to JIS K6258.

Claim 16 (Original): A fluororubber-based sealing material according to Claim 14, which has a TR_{10} value of not more than -30°C according to ASTM D1329 and a methanol swelling rate of not more than +50% at 25°C for 168 hours according to JIS K6258.

Claim 17 (Previously presented): A fluorine-containing elastomer according to Claim 4, wherein a sum total of the component (c) and of the component (d) is at least 10% by mole.

Claim 18 (Previously presented): A fluorine-containing elastomer according to Claim 4, wherein the component (e) is $\text{CF}_2=\text{CFOCF}_2\text{CF}_2\text{Br}$, $\text{CF}_2=\text{CFBr}$, $\text{CF}_2=\text{CHBr}$, $\text{CF}_2=\text{CFI}$ or $\text{CF}_2=\text{CHI}$.

Claim 19 (Previously presented): A fluorine-containing elastomer according to Claim 4, wherein the elastomer has a glass transition temperature T_g of -30°C to -45°C .

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Claim 20 (Previously presented): A fluorine-containing elastomer according to Claim 4, wherein the elastomer can give a curing product having low-temperature characteristics according to ASTM D1329 after organic peroxide curing:

$$-43^{\circ}\text{C} \leq \text{TR}_{10} < -30^{\circ}\text{C} < \text{TR}_{70} \leq 20^{\circ}\text{C}.$$

Claim 21 (Previously presented): A fluororubber-based sealing material obtaining by curing molding of a fluorine-containing elastomer composition according to Claim 11.

Claim 22 (Previously presented): A fluororubber-based sealing material obtaining by curing molding of a fluorine-containing elastomer composition according to Claim 12.

Claim 23 (Previously presented): A fluororubber-based sealing material according to Claim 21, for use as a sealing material for an automobile fuel system.

Claim 24 (Previously presented): A fluororubber-based sealing material according to Claim 22, for use as a sealing material for an automobile fuel system.

Claim 25 (Previously presented): A fluororubber-based sealing material according to Claim 21, which has a TR_{10} value of not more than -30°C according to ASTM D1329 and a methanol swelling rate of not more than +50% at 25°C for 168 hours according to JIS K6258.

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Claim 26 (Previously presented): A fluororubber-based sealing material according to Claim 22, which has a TR_{10} value of not more than -30°C according to ASTM D1329 and a methanol swelling rate of not more than +50% at 25°C for 168 hours according to JIS K6258.

Claim 27 (Previously presented): A fluororubber-based sealing material according to Claim 23, which has a TR_{10} value of not more than -30°C according to ASTM D1329 and a methanol swelling rate of not more than +50% at 25°C for 168 hours according to JIS K6258.

Claim 28 (Previously presented): A fluororubber-based sealing material according to Claim 24, which has a TR_{10} value of not more than -30°C according to ASTM D1329 and a methanol swelling rate of not more than +50% at 25°C for 168 hours according to JIS K6258.